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NAVOSH AIR BRANCH WEB SITE

[http://www.nfesc.navy.mil/enviro/esc425/
NoshArBr.htm](http://www.nfesc.navy.mil/enviro/esc425/NoshArBr.htm)

Finally, our long-awaited web site is up and running. The NAVOSH Air Branch web site contains information on Asbestos Management, Lead Management, Industrial Ventilation, and the Indoor Air Monitor newsletter. Under each subject, you can find helpful information about our services, training, publications, federal

regulations, Navy policy, and links to other web sites such as EPA, OSHA, and HUD with related information. Note that the web site URL is case dependant and therefore must be typed exactly as shown above.

NFESC NEWSLETTERS

The following are other newsletters published by NFESC, listed with name, subject and contact e-mail address.

1. **Currents** (http://www.nfesc.navy.mil/news_pub.htm) Navy Environmental News (formerly **The Minimizer**), environmental magazine on pollution prevention and compliance, quarterly, Kathi Jones kjones@nfesc.navy.mil
2. **BRAC Talk**, environmental base realignment and closure news, 3/year, Joyce Patterson jpatter@nfesc.navy.mil
3. **RPM News**, Navy installation restoration program news and information 3/year, Anita Ortiz aortiz@nfesc.navy.mil
4. **On The Waterfront**, (http://www.nfesc.navy.mil/news_pub.htm) News from the Shore Facilities Department, quarterly, Joe Connett jconnet@nfesc.navy.mil.

5. **Energy News** (http://www.nfesc.navy.mil/news_pub.htm) , quarterly, Jim Heller jheller@nfesc.navy.mil.

6. **Energized**, Dave Schuelke dschuel@nfesc.navy.mil.

7. **Security Fact**, physical security and security technology newsletter, quarterly, Mike Farrar mfarrar@nfesc.navy.mil.

8. **Solutions Quarterly**, information on activities and services provided by NFESC, quarterly, Lori Lee llee@nfesc.navy.mil.

Some of these newsletters are available for viewing or downloading from the NFESC web site. Click on the underlined newsletter titles above to visit the web site. For more information on a particular newsletter, please e-mail the point of contact listed above.

INDUSTRIAL VENTILATION TRAINING COURSES, SYSTEM DESIGN REFRESHER, TESTING AND TROUBLESHOOTING

Our Navy Occupational Safety and Health (NAVOSH) Air Branch, ESC 425, is offering two Industrial Ventilation (IV) System Design Refresher courses and two Industrial Ventilation System Testing courses this year. Both courses follow American Conference of Governmental Industrial Hygienist (ACGIH) methods.

The two-day IV Design Refresher Course reacquaints the participant with the fundamental information required to design an efficient IV system. Participants in the IV Design Refresher Course are limited to those who have completed any Fundamental IV Design Course. The two and half day IV Testing Course teaches the basics of IV system testing and troubleshooting.

The courses, offered at no charge, provide design engineers, qualified safety personnel, and industrial hygienists a comprehensive and “hands-on” understanding of IV systems. The student’s command

is responsible for travel and per diem. Students must bring a calculator with exponential functions.

The first IV Design Refresher and IV Testing courses of this year are offered on 18-19 May and 20-22 May, 1998 at Naval Station Anacostia Annex, Washington, DC.

The second IV Design Refresher and IV Testing Course of this year are offered from 22-23 June and 24-26 June, 1998 at Naval Station Yokosuka, Japan. Each class is limited to 25 students. To register contact Mr. Shigeki Asada, HRO Yokosuka via e-mail at c531@hro.pwcyoko.navy.mil.

For further information about the course, please contact Trinh Do via e-mail at tdo@nfesc.navy.mil.

NEW STANDARD

American National Standards Institute approves ANSI/ AIHA Z9.7 *Recirculation of Air from Industrial Process Exhaust Systems*

The ANSI Z9 Committee, sponsored by the American Industrial Hygiene Association (AIHA), received notice that the newly created standard was approved as of 15 April 1998. The scope of this standard establishes the minimum criteria for the design and operation of a recirculating industrial process exhaust ventilation system used for contaminant control.”

After the beginning of June, look for more information about the new standard on AIHA’s web page at URL <http://www.aiha.org>.

HEXAVALENT CHROMIUM

By Vincent Fabris,

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Chromium is a metal commonly found in some industrial environments. The most common valences are +2, +3 and +6. The most toxic form of chromium is hexavalent chromium (CrO_3), which has the +6 valence.

Currently OSHA's ceiling permissible exposure level (PEL) for hexavalent chromium is 0.1 mg/m³. OSHA is considering a PEL for an 8-hour time weighted average (TWA) of .005 mg/m³. The American Conference of Industrial Hygiene (ACGIH) has a threshold limit value (TLV) for an eight hour TWA of 0.05 mg/m³ for water soluble compounds such as chromic acid and 0.01 mg/m³ for water insoluble compounds such as lead chromate. ACGIH does not have short-term exposure levels or ceiling levels for CrO_3 .

In the Navy, as well as industry, hexavalent chromium is found in some paints and as chromic acid in plating operations. Common forms of hexavalent chromium in paints are lead chromate and zinc chromate. Some spray paints contain zinc chromate and are particularly hazardous as they aerosolize hexavalent chromium. Spray paints with hexavalent chromium should be substituted with a less hazardous material. Substitution should be done for non-sprayed paints, too. While brush painting with hexavalent chromium paints does not overexpose the worker, overexposure may occur while sanding previously painted surfaces.

If chromic acid is used for an electroplating process then appropriate local exhaust industrial ventilation is necessary. Check the ventilation system periodically to ensure it is working properly.

Hexavalent chromium fumes are also generated when welding on stainless steel or surfaces painted with lead chromate or zinc chromate paints. If this process is performed use industrial ventilation specifically designed to capture the welding fumes and capable of reducing exposure below the TLV. Information about ventilation systems can be found in the ACGIH

Industrial Ventilation Manual or *Military Handbook Industrial Ventilation Systems*.

Hexavalent chromium is a confirmed human carcinogen. The route of entry into the body for hexavalent chromium that can result in the most damage is through inhalation. It is associated with cancer in the lungs, nasal cavity and paranasal sinus. Exposure may also cause dermatitis, skin ulcers and perforation of the nasal septum.

If substitution, administrative controls, and engineering controls do not lower an employees exposure below the PEL or TLV then workers must wear a respirator. An industrial hygienist or safety specialist will have to determine whether an air-purifying respirator, supplied air respirator, or self contained breathing apparatus is required based on the air concentration and the respirator's protection factor. If an air-purifying respirator is used it must be used with a high efficiency particulate air (HEPA) filter or under the new 42 CFR Part 84 Regulation N100, R100 or P100 cartridge. If an oil mist is present in the work environment, use a P100 cartridge.

THE IAM CONNECTION

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IAM, Kappy Paulson's article "Ventilation Requirements for Hand Soldering" (Vol. 6, No. 2) recommends the installation of a ventilation system to control a process, hand soldering, that the article admits is not hazardous and does not present a risk to personnel. Recommending an engineering control for a "non-issue" is a questionable decision. In addition, the article mentions that "respiratory protection equipment may not be the best means to protect the employee". Protect the employee from what?

Mr. Zedd's data indicates all sample data associated with hand soldering to be "well below permissible exposure levels and short term exposure limits". The only potential source of lead intake into a worker that was mentioned in the article was the "traditional" poor practice of holding the soldering wire in your mouth

while soldering. A ventilation system sure won't fix this. Granted, a respirator may, but only because it covers up the worker's mouth.

Installing a ventilation system or implementing the use of respirators to control a "harmless" process is not optimal industrial hygiene practice.

Christopher Jones, Portsmouth Naval Hospital

MR. JONES, you're correct that it would be difficult to justify ventilation systems on a non-issue. However, I wrote the article because I received several calls from field Industrial Hygienists requesting information on the recommended flow rate for soldering operations.

Navy soldering operations range in duration and intensity. The OSH professional must use his or her judgement to determine the best way to manage a complaint. Both administrative and engineering controls may be worth considering to resolve the complaint and to reduce the irritating effects from selected materials, even if there is no quantifiable stressor. Prudent engineering practice indicates that ventilation is warranted even if there is no quantifiable stressor.

LCDR Philip Smith is focusing his research at Utah State University on defining the aerosolized stressors, such as resin acids, generated during soldering operations. He (and others) recently published an article, *Detection of Resin Acid Compounds in Airborne Particulate Generated from Rosin Used as Soldering Flux*, American Industrial Hygiene Association Journal, 58:868-875 (1997). Lcdr Smith also submitted a paper on the detection of oxidized resin acids present in similar aerosol, and probable catalytic changes produced by lead/tin solder on the resin acid composition during heating. He is working on several other papers including characterization of gas/vapor phase compounds produced during rosin heating, and the biological effects. These papers will help better define the stressors expected in soldering operations.

Harold Zedd, Naval Environmental Health Center (NEHC), used formaldehyde as a surrogate for

soldering fumes during his report, *Special Industrial Hygiene Evaluation of Shipboard Miniature/Micro-miniature (2M) Workbench Operations*. At the time he did the test, he used the best information available to the OSH community. Based on new information, formaldehyde may not be the correct component to use as a surrogate for stressors generated during soldering operations.

Kappy Paulson, NFESC.

WASTE ASBESTOS IN WATER

By Nancy Bogart

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Question: Is there any limit on asbestos release to a municipal wastewater treatment plant? Wastewater from an asbestos removal has been collected and drummed. Testing shows the asbestos level to be below 7,000,000 fibers/liter. The contractor wishes to dump it into the sewer as is. We (the activity) insist it must be filtered. Is there any regulation to back us up?

Answer: The treatment plant to receive the wastewater must be notified. The state or federally mandated NPDES permit may require limited or no asbestos input. Since state requirements must be equivalent or more stringent than federal, the amount of asbestos acceptable may vary, but will not exceed 7,000,000 fibers/L, the Clean Water Act (40 CFR 131.6) limit for the concentration of asbestos in drinking water. The treatment plant may require filtering out the asbestos. Waste shower water with its accompanying load of soap clogs filters to an unacceptable degree.

If we try to avoid the treatment plant by evaporating out the water, we end up with airborne asbestos. We go back to the question of release to water limit.

Is there any way around this? Yes. Use water in the removal process judiciously. Consider wastewater removal up front. Use the waste shower water to wet down the asbestos for removal and disposal. This proposal seemed good in *1984, but now we have increased worries about body fluids and wash water

possibly carrying hepatitis, TB, and AIDS virus. This limits the idea to using the wastewater to ensure the wetness of asbestos wastes packaged for disposal.

In the end we are left with the conclusion that the treatment plant is the final arbiter in the decision to release.

*Natale, Anthony and Hoag Levins, Asbestos Removal and Control, SourceFinders, Voorhees, NJ, 1984.

ARTICLE REVIEW

By Kappy Paulson

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Evaluation and Control of Carbon Monoxide Exposure from Propane-fueled Forklifts, Brigitte Roberge, Applied Occupational And Environmental Hygiene, 13(3) March 1998, pp183-191.

This article provides background data to facility engineers and OSH professionals considering a preventative maintenance program to control carbon monoxide (CO) emissions from forklifts in warehouses. Ms. Roberge compiles CO emissions (idle and fast idle) data, operator exposure (average, duration, peak) and ambient air from warehouse operations at 10 Canadian companies

Ms. Roberge states, "It is important, when a mechanic does maintenance on forklifts, to differentiate the diagnosis of the condition of the ignition system components from the carburetion system adjustments, because sometimes the carbon monoxide emissions cannot be sufficiently reduced by simply adjusting the carburetor." She recommends that mechanics tune the engine at both idle and fast idle speeds. In fact, 31% of the samples showed higher CO emissions during fast idling when compared to idling speed. Ms. Roberge details some of the other common problems that mechanics overlook when performing forklift tune-ups.

From time to time, we receive questions on how to design ventilation systems for warehouses. Before considering increased dilution ventilation in the warehouse, we suggest that engineers and OSH

personnel evaluate the forklift maintenance program and ensure that the forklifts are operating optimally. *Industrial Ventilation, A Manual of Recommended Practice*, published by The American Conference of Governmental Industrial Hygienists, also recommends, "A regular maintenance program incorporating final engine tuning through carbon monoxide analysis of the exhaust gas must be provided." as the first condition for using a dilution ventilation.

If changes to the maintenance schedule and procedures do not produce a reduction in warehouse carbon monoxide levels, please call us for assistance.

GETTING THE LEAD OUT

By Leah Alejo

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Although few people now die from lead poisoning, it is still a constant danger, especially for children.

Lead remains the most serious environmental threat for U.S. children. Children ages six months to six years are at greatest risk of lead poisoning, which can slow a child's growth and cause learning and behavior problems. Lead was outlawed in paint as of 1978, but older paint can crumble into dust that clings to toys, fingers, and other things kids normally put in their mouths.

Even low levels of lead exposure can have an effect on a child's IQ. Lead poisoning can also cause kidney damage and anemia, contribute to high blood pressure, and affect the reproductive organs.

An estimated 890,000 children ages one to five have elevated lead levels in their systems, according to the Center for Disease Control and Prevention.

"The battle is far from over," said Jerry Hershovitz, Chief of the CDC's lead poisoning prevention branch. "This is a disease that should not be in our society because we know what causes it and what it takes to prevent it, yet it's still here."

WHERE IT'S FOUND

- Paint on houses built before 1978, especially walls and windowsills, and in dirt around these homes.
- Ceramics, leaded crystal, and pottery.
- Toys and imported cans that are sealed with lead solder.
- Some folk remedies and cosmetics.
- Lead dust on work clothes.
- Some imported candy.
- Dirt near freeways.
- Water that flows through some types of pipes and faucets.
- Car batteries and radiators.

HOW LEAD AFFECTS THE BODY

- Lead enters a person's body when inhaled or ingested. Organic lead compounds, such as lead acetate in some pesticides, can be absorbed through the skin.
- Lead goes into stomach where it is absorbed in the intestines and enters the blood. (Lead is absorbed more quickly in someone with an empty stomach.)
- Once in the blood, lead can travel throughout the body, targeting the bone marrow, nervous system, and kidneys. The half-life of lead in blood is approximately 30 days.

TARGET ZONES:

- The nervous system. This causes swelling of the brain, and in extreme cases can cause seizures, coma, and even death.
- Skeletal system. Since it is similar in composition to calcium, lead gets stored in the bones and is released over time in the blood. Lead in bones has a half-life of more than 20 years.
- Lead can cause anemia by inhibiting several enzymes that are necessary to make healthy red blood cells.
- In extreme cases, lead poisoning can lead to renal failure.

WHO'S AT RISK?

- One in 12 Medicaid children in the United States, or about 500,000 children, has harmful blood levels—triple the rate of those not receiving Medicaid.
- California has about 2.2 million older homes that are likely to have lead paint, putting 2 million kids at risk for lead poisoning.
- An estimated 7.84% of 1-5 year olds in California, or 239,000 kids, have elevated lead levels in their blood.
- In Los Angeles County, an estimated 50,000 kids are at risk of lead poisoning.
- Since 1991, there have been 3,943 confirmed cases of lead poisoning countrywide, including 208 in the San Fernando and Santa Clarita valleys.

DID YOU KNOW?

- Most children with lead poisoning don't look or act sick.
- Pencils are not a threat because they contain graphite, not lead.
- When lead was taken out of gasoline, blood lead levels in the general population dropped dramatically.
- Bullets stuck in the flesh don't pose a major lead risk, but bullets that remain in body cavities, such as the stomach or lungs, can be absorbed and cause lead poisoning.

WHAT YOU CAN DO

- Clean up paint chips and dust with a wet mop or cloth. Do not scrape, sand, burn, or sweep paint.
- Replace a lead-painted item (like a door) with a lead-free item; cover surfaces that can't be replaced (like walls and floors) with a tough material like sheet-rock, paneling, or floor tiles, or remove the lead paint completely.
- If you choose to do the lead removal yourself, wear a respirator so you don't breathe in lead. Children, pregnant women and pets shouldn't be in the house when work is done.
- Wash children's hands and faces after they have been playing outside or on the floor.

- A nutritious diet of regular meals can give some protection against lead absorption.
- Buy only crayons with “nontoxic” label.
- Test household items using a lead test kit.

Free blood testing is available for children of low-income families. For more information, call the county’s Childhood Lead Poisoning Prevention Program at (800) LA4-LEAD.

Source: Los Angeles Times, Valley Briefing, Sunday, 22 March 1998.

The Indoor Air Monitor is published bimonthly by the NAVOSH Air Branch of the Naval Facilities Engineering Service Center. The views and opinions expressed in this publication are not necessarily those of the Department of the Navy. Send information, comments, or ideas to: Commanding Officer, NFESC-425 Attn: IAM, 100 23rd Avenue, Port Hueneme, CA 93043-4370, or via e-mail at ‘iam@nfesc.navy.mil’. Please include your name, mailing address, e-mail address, and phone number.

Naval Facilities Engineering Service Center

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